

CLAIMS:

We Claim:

1. In a motor vehicle having an interior passenger compartment including a seat on which a child seat may be placed, a detector system for detecting the presence of the child seat on the seat,
5 comprising:

receiving means arranged in the vehicle for obtaining information about contents of the seat and generating a signal based on any contents of the seat, said receiving means being structured and arranged to generate a different signal for different contents of the seat when such contents are present on the seat, and

analyzing means coupled to said receiving means for analyzing the signal in order to determine
10 whether the contents of the seat include a child seat.

2. The system of claim 1, wherein said analyzing means are structured and arranged to determine whether the child seat is in a rear-facing position.

3. The system of claim 1, wherein said receiving means comprise wave transmitting means for transmitting waves toward the seat, wave receiving means arranged relative to said wave transmitting means for receiving waves reflected from the seat and a processor coupled to said wave receiver means for generating the different signal for the different contents of the seat based on the received waves reflected from the seat.
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4. The system of claim 3, wherein said wave transmitting means are structured and arranged to transmit ultrasonic waves.
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5. The system of claim 3, wherein said wave receiving means comprise two wave receivers spaced apart from one another.
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~~Sub 1~~ 6. The system of claim 5, wherein said processor is structured and arranged to process the reflected waves from each of said receivers in order to create a respective signal characteristic of the contents of the seat based on the reflected waves.
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7. The system of claim 6, wherein said analyzing means comprise categorization means coupled to said processor for categorizing said signals, said categorization means comprising pattern

recognition means for recognizing and thus identifying the contents of the seat by processing said signals based on the reflected waves from the contents of the seat into a categorization of said signals characteristic of the contents of the seat.

5 ^{sub 15} 8. The system of claim 7, wherein each of said signals comprises a plurality of data, all of said data being compared to the data corresponding to patterns of reflected waves stored within said pattern recognition means and associated with possible contents of the seat.

10 9. The system of claim 7, wherein said pattern recognition means comprise a trained neural network.

10. The system of claim 1, wherein said analyzing means comprise categorization means for categorizing the signal to obtain an identification of the contents of the seat.

15 11. The system of claim 1, further comprising output means coupled to said analyzing means for affecting at least one other system within said vehicle based on the determination of whether a child seat is present on the seat.

20 12. In a motor vehicle having an interior passenger compartment including a seat on which a child seat may be placed, a method for detecting the presence of a child seat on the seat, comprising the steps of:

25 obtaining information about contents of the seat,
generating a signal based on the information about the contents of the seat, a different signal being generated for different contents of the seat when such contents are present on the seat, and
analyzing the signal in order to determine whether the contents of the seat include a child seat.

30 13. The method of claim 12, wherein the step of analyzing the signal comprises the step of analyzing the signal to determine whether the contents of the seat include a child seat in a rear-facing position.

14. The method of claim 12, wherein the step of obtaining information about the contents of the seat comprises the steps of transmitting waves toward the seat and receiving waves reflected from the

seat, the step of generating a signal based on the information about the contents of the seat comprising the step of processing the received, reflected waves in order to generate a different signal for different received, reflected waves.

5 15. The method of claim 14, wherein ultrasonic waves are transmitted toward the seat.

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A3 } 16. The method of claim 14, wherein the step of processing the reflected waves comprises the
step categorizing said electronic signal to thereby obtain an identification of the contents of the seat.

10 17. The method of claim 14, wherein reflected waves from the seat are received at at least two
spaced apart locations.

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A4 } 18. The method of claim 17, wherein the reflected waves from each of the at least two
locations is independently processed to create a respective signal characteristic of the contents of the seat
15 based on the reflected waves, each of said signals containing a pattern representative of the contents of the
seat

19. The method of claim 18, wherein the step of processing the reflected waves comprises the
step of categorizing said ~~electronic~~ signals to thereby obtain an identification of the contents of the seat.

20 20. The method of claim 19, wherein each of said signals comprises a plurality of data, further
comprising the step of comparing all of said data to data corresponding to patterns of reflected waves
associated with possible contents of the seat.

25 21. The method of claim 12, further comprising the step of
affecting at least one other system within said vehicle based on the determination of whether a child
seat is present on the seat.